

IN THE SPECIFICATION:

Please amend the specification as follows:

Pursuant to 37 CFR § 1.121(b)(1)(iii), a marked up copy of each paragraph amended below appears on the page immediately following each amendment.

Please delete page 1, line 3 to page 1, line 11, and insert the following therefor:

-- BACKGROUND

a¹ The disclosure relates to personal computer systems generally and, more particularly, to an audio amplifier arrangement that selectively switches between voltage supplies, the selection depending on the computer user's election to avail himself of a particular one of two or more available speaker systems that may include, for example, either the personal computer's internal speakers or externally connected headphones. --

Please delete page 6, line 23 to page 7, line 6, and insert the following therefor:

-- SUMMARY

a² The above and other objects, advantages and features are achieved in one aspect of the disclosure by an audio system for use with a personal computer. The audio system comprises a first voltage supply; a second voltage supply; an audio amplifier; a connector for connecting a first speaker to the audio amplifier; and a jack for coupling a second speaker to the audio amplifier. A jack sense line is coupled to the jack, the jack sense line assumes a first condition when a speaker is connected to the jack and assumes a second condition when a speaker is not connected to the jack. A switch is coupled to the first voltage supply, to the second voltage supply, and to the audio amplifier. The switch operates in response to the first condition of

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cont the jack sense line to couple the first voltage supply to the audio amplifier and operates in response to the second condition of the jack sense line to couple the second voltage supply to the audio amplifier. --

Please delete page 7, line 18 to page 8, line 5, and insert the following therefor:

A3 -- The disclosure may also be perceived in an apparatus that comprises a personal computer chassis having a connector for speakers and a jack for headphones. An audio amplifier system including an audio amplifier is enclosed within the computer chassis. A jack sense indicator is coupled between the jack and the audio amplifier system and is operable to provide a first indication when headphones are connected to the jack and a second indication when headphones are not connected in the jack. The apparatus also includes dual-mode voltage supply comprising a first voltage source and a second voltage source. A switch is coupled to the dual-mode voltage supply and to the jack sense indicator for coupling the first voltage source to the audio amplifier when headphones are connected to the jack and for coupling the second voltage source to the audio amplifier when headphones are not connected to the jack.

The disclosure may be exploited as a method of providing power to an audio amplifier in a personal computer system. The method comprises providing a voltage supply system that includes a first voltage source and a second voltage source; detecting whether secondary Speakers are connected to the personal computer; and coupling the first voltage source to the audio amplifier when secondary Speakers are connected to the personal computer and coupling the second voltage source to the audio amplifier when secondary speakers are not connected to the personal computer. --

Please delete page 8, line 17 to page 9, line 19, and insert the following therefor:

a4 -- In another manifestation of the disclosure, an audio amplifier system in a personal computer system comprises a first amplifier stage and a second amplifier stage, with each of the amplifier stages having, respectively, an input, an output, and a voltage supply connection. The amplifier system also comprises a first speaker connection and a second speaker connection, with a jack (for headphones or similar optional ancillary listening devices) coupled to the first speaker connection. A first voltage supply and a second voltage supply are coupled to a voltage supply node. The first voltage supply is designed to be coupled to, and derived from, an AC line. A first switch element is coupled to the jack-sense indicator and has a pole coupled to the output of the second amplifier stage and has a contact coupled to the second speaker connection. A second switch element has a pole connected to the voltage supply connection of the first amplifier stage, a first contact coupled to the voltage supply node, and a second contact coupled to the second voltage supply. The jack-sense indicator is coupled to the first switch element and to the second switch element and operates to determine the respective conditions of the switch elements in response to a determination whether speakers are connected to the jack. In a specific implementation of the embodiment summarized above, if the jack-sense indicator determines that speaker(s) are not connected to the jack, then the jack-sense indicator causes the pole of the first switch element to be connected to its contact so that the output of the second amplifier stage is coupled to the second speaker connection and causes the pole of the second switch element is connected to its first contact so that the first voltage supply is disconnected from the voltage supply connection of the first amplifier stage. Conversely, if the jack-sense indicator determines that speaker(s) are connected to the jack, then the jack-sense indicator causes the pole of the first switch element to be disconnected from its contact so that the output of the second amplifier stage is not coupled to the second speaker connection and causes the pole of the second switch element to be connected to its

second contact so that the first voltage supply is not coupled to the voltage supply connection of the first amplifier stage and second voltage supply is connected to the voltage supply connection of the first amplifier stage.

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cont
BRIEF DESCRIPTION OF THE DRAWINGS

The present disclosure may be better understood, and its numerous objects, features, and advantages made apparent to those skilled in the art by referencing the accompanying drawings, in which: --

Please delete page 9, line 24 to page 9, line 26, and insert the following therefor:

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-- FIGURE 2 is a circuit diagram depicting an embodiment in which the voltage supply portion of the amplifier system is configured to enable more nearly optimal performance in both the bridged and the single-ended modes. --

Please delete page 10, line 2 to page 10, line 7, and insert the following therefor:

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-- For a thorough understanding of the subject disclosure, including a mode for carrying out the disclosure, reference is made to the following Detailed Description, including the appended Claims, in connection with the above-described Drawings. The Description is intended to be illustrative of the disclosure and is not to be construed in a manner that circumscribes the scope of protection properly attributed to the disclosure. --

Please delete page 12, line 16 to page 13, line 26, and insert the following therefor:

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-- Accordingly, although while particular embodiments of the present disclosure have been shown and described, it will be recognized by those skilled in the art that, based upon the teachings herein, further changes and modifications may be made without departing from the disclosure and its broader aspects. Therefore, the appended claims are to encompass within their scope all such changes, modifications and equivalents as are within the true spirit and scope of this disclosure. For example, the audio amplifier 10 is described to assume the form of a noninverting amplifier 12 and an inverting amplifier 11, but other amplifier arrangements are contemplated by the disclosure. What is significant is that the amplifier has a configuration that selectively enables either balanced or bridged-mode operation. As is well known, such operation may be achieved through various design approaches, including differential amplifier configurations, or through the use of center-tapped output transformers. In addition, although the single-ended output to jack 40 is described for convenience to be taken from the noninverting amplifier, the single-ended output could easily be taken from the inverting amplifier. In the ramification, SW1 would then be deployed in the path between output 122 of amplifier 12 and speaker connection 21.

Furthermore, with respect to switches SW1 and SW2, for purposes of generality these switches are depicted as distinct switch elements. Those skilled in the art recognize that SW1 and SW2 may be implemented in the form of a single switch, with two poles. The switch, or switch elements, may be implemented in accordance with a number of techniques, including integrated or discrete semiconductor devices, mechanical switches, or microelectromechanical systems. The MAX 4298/MAX 4299 integrated circuit device from Maxim Integrated Products, 120 San Gabriel Drive, Sunnyvale CA, is an example of a commercially available product that incorporates an on-chip audio amplifier stage, a linear voltage regulator

and logic-driven switches. However, the semiconductor switches on the MAX4298/4299 are used merely to mute the audio amplifier, and there is no suggestion, or opportunity, to reconfigure the switches incorporated therein so as to optimize voltage supply performance in response to the operating mode of the audio amplifier. Also, it is apparent that the description assumes "normal" operation to exist when headphones or the like are not connected to jack 40. Of course, this assumption represents merely a convention adopted to facilitate a description of the disclosure and, as such, is reversible, and SW1 and SW2 may be reconnected concomitantly.

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cont In addition, it may be advantageous that the disclosure be implemented as an integrated circuit device, so that amplifiers 11 and 12, switches SW1 and SW2, and voltage regulator 60 be fabricated as a monolithic analog integrated circuit. However, the disclosure is not intended to be limited in this manner, and the system designer is free to partition these functions to one or more semiconductor devices as seen fit.

Finally, the disclosure has been described largely as a technique that accommodates either internal speakers or headphones; however, the disclosed concept is clearly extensible to any technique for the selection of voltage supplies in response to a users desire to avoid himself of one of a set of optional peripheral devices. --

MARKED UP COPY OF AMENDMENT PURSUANT TO 37 CFR § 1.121 (b)(1)(iii)

Page 1, line 3 to page 1, line 11.

BACKGROUND [OF THE INVENTION]

[Field of the Invention]

The [invention] disclosure relates to personal computer systems generally and, more particularly, to an audio amplifier arrangement that selectively switches between voltage supplies, the selection depending on the computer user's election to avail himself of a particular one of two or more available speaker systems that may include, for example, either the personal computer's internal speakers or externally connected headphones.

[Description of the Related Art]

Page 6, line 23 to page 7, line 6.

SUMMARY [OF THE INVENTION]

The above and other objects, advantages and features are achieved in one aspect of the [invention] disclosure by an audio system for use with a personal computer. The audio system comprises a first voltage supply; a second voltage supply; an audio amplifier; a connector for connecting a first speaker to the audio amplifier; and a jack for coupling a second speaker to the audio amplifier. A jack sense line is coupled to the jack, the jack sense line assumes a first condition when a speaker is connected to the jack and assumes a second condition when a speaker is not connected to the jack. A switch is coupled to the first voltage supply, to the

second voltage supply, and to the audio amplifier. The switch operates in response to the first condition of the jack sense line to couple the first voltage supply to the audio amplifier and operates in response to the second condition of the jack sense line to couple the second voltage supply to the audio amplifier.

Page 7, line 18 to page 8, line 5.

The [invention] disclosure may also be perceived in an apparatus that comprises a personal computer chassis having a connector for speakers and a jack for headphones. An audio amplifier system including an audio amplifier is enclosed within the computer chassis. A jack sense indicator is coupled between the jack and the audio amplifier system and is operable to provide a first indication when headphones are connected to the jack and a second indication when headphones are not connected in the jack. The apparatus also includes dual-mode voltage supply comprising a first voltage source and a second voltage source. A switch is coupled to the dual-mode voltage supply and to the jack sense indicator for coupling the first voltage source to the audio amplifier when headphones are connected to the jack and for coupling the second voltage source to the audio amplifier when headphones are not connected to the jack.

The [invention] disclosure may be exploited as a method of providing power to an audio amplifier in a personal computer system. The method comprises providing a voltage supply system that includes a first voltage source and a second voltage source; detecting whether secondary speakers are connected to the personal computer; and coupling the first voltage source to the audio amplifier when secondary speakers are connected to the personal computer and coupling the second voltage source to the audio amplifier when secondary speakers are not connected [tot] to the personal computer.

Page 8, line 17 to page 9, line 19.

In another manifestation of the [invention] disclosure, an audio amplifier system in a personal computer system comprises a first amplifier stage and a second amplifier stage, with each of the amplifier stages having, respectively, an input, an output, and a voltage supply connection. The amplifier system also comprises a first speaker connection and a second speaker connection, with a jack (for headphones or similar optional ancillary listening devices) coupled to the first speaker connection. A first voltage supply and a second voltage supply are coupled to a voltage supply node. The first voltage supply is designed to be coupled to, and derived from, an AC line. A first switch element is coupled to the jack-sense indicator and has a pole coupled to the output of the second amplifier stage and has a contact coupled to the second speaker connection. A second switch element has a pole connected to the voltage supply connection of the first amplifier stage, a first contact coupled to the voltage supply node, and a second contact coupled to the second voltage supply. The jack-sense indicator is coupled to the first switch element and to the second switch element and operates to determine the respective conditions of the switch elements in response to a determination whether speakers are connected to the jack. In a specific implementation of the embodiment summarized above, if the jack-sense indicator determines that speaker(s) are not connected to the jack, then the jack-sense indicator causes the pole of the first switch element to be connected to its contact so that the output of the second amplifier stage is coupled to the second speaker connection and causes the pole of the second switch element is connected to its first contact so that the first voltage supply is disconnected from the voltage supply connection of the first amplifier stage. Conversely, if the jack-sense indicator determines that speaker(s) are connected to the jack, then the jack-sense indicator causes the pole of the first switch element to be disconnected from its contact so that the output of the second amplifier stage is not coupled to the second speaker connection and causes the pole

of the second switch element to be connected to its second contact so that the first voltage supply is not coupled to the voltage supply connection of the first amplifier stage and second voltage supply is connected to the voltage supply connection of the first amplifier stage.

BRIEF DESCRIPTION OF THE DRAWINGS

The present [invention] disclosure may be better understood, and it's numerous objects, features, and advantages made apparent to those skilled in the art by referencing the accompanying drawings, in which:

Page 9, line 24 to page 9, line 26.

FIGURE 2 is a circuit diagram depicting an embodiment [of the invention] in which the voltage supply portion of the amplifier system is configured to enable more nearly optimal performance in both the bridged and the single-ended modes.

Page 10, line 2 to page 10, line 7.

For a thorough understanding of the subject [invention] disclosure, including a mode for carrying out the [invention] disclosure, reference is made to the following Detailed Description, including the appended Claims, in connection with the above-described Drawings. The Description is intended to be illustrative of the [invention] disclosure and is not to be construed in a manner that circumscribes the scope of protection properly attributed to the [invention] disclosure.

Page 12, line 16 to page 13, line 26.

Accordingly, although while particular embodiments of the present [invention] disclosure have been shown and described, it will be recognized by those skilled in the art that, based upon the teachings herein, further changes and modifications may be made without departing from the [invention] disclosure and its broader aspects. Therefore, the appended claims are to encompass within their scope all such changes, modifications and equivalents as are within the true spirit and scope of this [invention] disclosure. For example, the audio amplifier 10 is described to assume the form of a noninverting amplifier 12 and an inverting amplifier 11, but other amplifier arrangements are contemplated by the [invention] disclosure. What is significant is that the amplifier has a configuration that selectively enables either balanced or bridged-mode operation. As is well known, such operation may be achieved through various design approaches, including differential amplifier configurations, or through the use of center-tapped output transformers. In addition, although the single-ended output to jack 40 is described for convenience to be taken from the noninverting amplifier, the single-ended output could easily be taken from the inverting amplifier. In the ramification, SW1 would then be deployed in the path between output 122 of amplifier 12 and speaker connection 21.

Furthermore, with respect to switches SW1 and SW2, for purposes of generality these switches are depicted as distinct switch elements. Those skilled in the art recognize that SW1 and SW2 may be implemented in the form of a single switch, with two poles. The switch, or switch elements, may be implemented in accordance with a number of techniques, including integrated or discrete semiconductor devices, mechanical switches, or microelectromechanical systems. The MAX 4298/MAX 4299 integrated circuit device from Maxim Integrated Products, 120 San Gabriel Drive, Sunnyvale CA, is an example of a commercially available product that incorporates an on-chip audio amplifier stage, a linear voltage regulator

and logic-driven switches. However, the semiconductor switches on the MAX4298/4299 are used merely to mute the audio amplifier, and there is no suggestion, or opportunity, to reconfigure the switches incorporated therein so as to optimize voltage supply performance in response to the operating mode of the audio amplifier. Also, it is apparent that the description [of the invention] assumes "normal" operation to exist when headphones or the like are not connected to jack 40. Of course, this assumption represents merely a convention adopted to facilitate a description of the [invention] disclosure and, as such, is reversible, and SW1 and SW2 may be reconnected [concomitantly] concomitantly.

In addition, it may be advantageous that the [invention] disclosure be implemented as an integrated circuit device, so that amplifiers 11 and 12, switches SW1 and SW2, and voltage regulator 60 be fabricated as a monolithic analog integrated circuit. However, the [invention] disclosure is not intended to be limited in this manner, and the system designer is free to partition these functions to one or more semiconductor devices as seen fit.

Finally, the [invention] disclosure has been described largely as a technique that accommodates either internal speakers or headphones; however, the [inventive] disclosed concept is clearly extensible to any technique for the selection of voltage supplies in response to a users desire to avoid himself of one of a set of optional peripheral devices.